

Chapter 9

9.4 Impacts and Mitigation Measures of Alternative A: Proposed Project

9.4.1 Construction-Related Impacts

Under Alternative A, recreation conditions in the construction area would be changed by temporary modifications to the river channel. Construction activities would include diverting water into a temporary channel during each construction season in order to build the new diversion facilities. This channel would be constructed of grouted boulders and rocks and located on river right between the diversion site and I-80. The channel would be approximately 30 feet wide and is designed to accommodate a range of flows up to 2,000 cfs. Additionally, a Bailey bridge (i.e., an easily assembled, prefabricated bridge) or equivalent structure would be placed at the former diversion site for construction access from the left bank to the right bank of the Truckee River. The bridge would be placed above the mean high water mark and would remain in place until construction of the new diversion facilities is completed.

Construction of the proposed project would include placing and operating heavy equipment and materials in or near the river channel. Construction activities would also include blasting bedrock at the site of the new diversion facility.

Impact 9-1: Change in Recreation Opportunities during Project Construction

Recreational boating through the temporary diversion and under the proposed bridge by kayak or raft would be possible; however, the presence of construction equipment, materials, and the temporary construction features discussed above would represent an increased risk to public safety. This increased risk would exist especially in situations where boaters find themselves in unfamiliar navigational circumstances resulting from changes in flow or are unaware of temporarily changed instream conditions resulting from project construction. This impact is considered *significant*.

Implementing Mitigation Measure 9-1 would reduce this impact to a less-than-significant level.

Mitigation Measure 9-1: Implement appropriate measures to ensure public safety during project construction

In order to minimize risk of injury to recreational boaters within the construction area, a temporary portage path will be constructed before initiation of instream construction activities. The pathway will extend from upstream of the proposed diversion site to the downstream side of the temporary bridge to allow for

~~complete portage around the construction area and its associated equipment, materials, and temporary features. A rope, floating boom, Floating bouys or other appropriate equipment will be installed in the river upstream of the construction area to guide boaters to a take-out location and the portage path or to allow them to scout the construction area for passage. Signs will be placed at an appropriate distance upstream of the construction area, warning boaters of the upcoming construction zone. Signs and information will be made available at put-in and take-out areas or other points of river access, informing boaters and other recreational users of the proposed construction schedule and components of project construction that may pose a challenge to navigation. The project applicant will provide easily updated information to the public regarding construction schedules and activities. This information will be provided in the form of a phone number with a message that is updated on a daily basis. In addition, the project applicant will work in coordination with the blasting contractor to ensure that the river is clear of boaters before blasting activities occur by posting signage and possibly stationing an employee above the I-80 Floriston bridge during blasting, and that boaters and other recreational users are informed of the times that blasting would occur by mailing notices to commercial river companies.~~

~~Appropriate fencing will be placed around points of ingress to the construction area; this fencing must prevent recreation users from unknowingly entering the construction area. Fencing and signage will not interfere with will direct boaters to the take-out areas or the portage path around the project construction area.~~

~~To ensure the safety of boaters attempting passage through the project construction area, the project applicant will keep the temporary diversion channel clear of obstructions when construction is not occurring. Obstructions include construction equipment or materials (e.g., rebar) that impede navigation or compromise the safety of recreational boaters.~~

Impact 9-2: Change in Angling Success during Project Construction

Construction activities associated with the proposed project have the potential to cause mortality and habitat degradation of fish species and other aquatic-dependent organisms in the project construction and operation areas. However, the implementation of a SWPPP, construction BMPs, and a hazardous materials spill prevention and response plan would minimize potential sedimentation, turbidity, and the spills of hazardous materials into the stream environment that can harm aquatic organisms and communities. These factors are not expected to lead to a decrease in angling success during project construction.

The temporary diversion channel associated with project construction would provide the primary route for movement of adult and juvenile fish past the

construction area. Therefore, this impact is considered *less than significant*. No mitigation is required.

9.4.2 Operation-Related Impacts

The proposed diversion structure is designed with a boat/debris chute for passage of recreational craft. This feature is new to diversion dams on the Truckee River. The proposed project is designed to

- keep the overall diversion structure small and approximately 5 feet above the bottom of the river bed at its lowest point (figure 2-4);
- keep the river gradient near existing grade, with 16 feet of fall over 700 feet of length (average slope is 2.3%, or 120 feet per mile);
- ~~align the boat/debris chute to direct water into the boating play wave (described above, under “Recreational Boating—Floriston to Farad”);~~
- retain the popular downstream boating play wave;
- provide self-rescue areas on river right by constructing eddy structures into the roughened channel;
- fine-tune the replacement of the weir (just below the I-80 bridge) to minimize its effects;
- include a marked portage trail on river right, connected to a convenient landing point near the I-80 bridge; and
- prevent entrapment of boaters passing over the dam.

Impact 9-3: Change in Boat Passage Resulting from Project Implementation

The boat/debris chute is designed to maintain a Class II rapid-difficulty ranking. The boat/debris chute is designed to be 20 feet long; therefore, a standard 14-foot-long rubber raft could pass in any orientation. Approach and navigation through the chute should be straightforward for knowledgeable and well-equipped boaters. Safe navigation of the diversion dam would require a moderate level of skill because of powerful currents and high-standing waves; however, this skill level is less than or equal that required to navigate the river under existing conditions.

The proposed project is designed to create a sweeping velocity parallel to the intake structure. Sweeping velocities are intended to enhance the passage of sediment and debris in the downstream direction horizontally across the structure. Vertical or approach velocities that have the potential to pin a kayaker, swimmer, or other buoyant object against the intake screen have been physically

and hydrologically modeled for the project. Modeling results indicate that vertical (approach) velocities across the intake screen would range from 1 to 3 feet per second depending on flow regimes (McLaughlin 2001). This velocity is comparable to existing river velocities and is a rate that most swimmers and kayakers can exceed. Therefore, it is not expected that implementation of the proposed project will lead to an increased risk of entrapment. This impact is considered *less than significant*. No mitigation is required.

Impact 9-4: Impairment of Flows Affecting Designated Beneficial Uses (Change in Recreational Boating Opportunities during Project Operation)

The State CEQA Guidelines (14 CCR 15131(b)) state that “economic or social effects of a project may be used to determine the significance of physical changes caused by the project.” Under this impact, recreational use is considered to assist in determining the significance of a reduction in flows.

Diversion of water from the river would alter the frequency with which flows equal or exceed the minimum rate necessary to conduct boating activities (a designated beneficial use as identified in chapter 4, “Water Quality”). Kayakers and rafters require minimum streamflows of 400 and 600 cfs, respectively. The average number of days that various flow rates representing recreation thresholds are met or exceeded during the period of study (March 1–September 30) is shown in table 9-3.

Project diversions would reduce the number of days during which the 400 cfs minimum threshold for kayaking was met by an average of 55% over the period of record. During the recreation season, the distribution of reduction in suitable kayaking days is highly variable, ranging from an average reduction of 6 days (16%) in May to an average reduction of 23 days (93%) in August (the highest monthly average reduction). A monthly comparison between existing and with-project conditions, in terms of the average number of days that the 400 cfs minimum threshold is met or exceeded, is shown in table 9-4. The specific reduction each year would depend largely on water year type. The average number of days based on water year type is shown in table 9-5.

Project diversions would reduce the number of days the 600 cfs threshold for rafting is met or exceeded by an average of 44% over the period of record. During the recreation season, the distribution of reduction in suitable rafting days is less variable than that for kayaking, ranging from an average reduction of 4 days (15%) in May to an average reduction of 10 days (43%) in April (the highest monthly reduction in days). A monthly comparison between existing and with-project conditions, in terms of the average number of days that the 600 cfs minimum threshold is met or exceeded, is shown in table 9-6. The specific reduction each year would depend largely on water year type. The average number of days based on water year type is shown in table 9-7. The number of

days the 400 cfs and 600 cfs thresholds are met or exceeded was also compared (figure 9-2).

Table 9-3. Recreational Flow Thresholds for the Hydrologic Record between the Months of March and September under Existing and With-Project Conditions, and Average Number of Days per Year on which Recreation Flows are Reduced

Recreation Flow (cfs) Thresholds	Existing Conditions (days)	With Project (days)	Days Reduced	Percent Reduction (%)
Fishing: 150	203	122	81	40
Kayaking: 400	189	82	107	56
Rafting: 600	119	67	52	44

Table 9-4. Recreational Flows for the Hydrologic Record under Existing and With-Project Conditions, and Reduction in Average Number of Days per Month during which the 400 cfs Level is Met

Month	Existing Conditions (days)	With Project (days)	Days Reduced	Percent Reduction (%)
March	24	11	13	54
April	29	18	11	38
May	31	25	6	19
June	28	16	12	43
July	28	7	21	75
August	27	2	25	93
September	24	2	22	92

Table 9-5. Recreational Flows for Normal, Driest, and Wettest Years of the Hydrologic Record by Month during which the 400 cfs Level is Met

Month	1973 Normal (days)	1977 Dry (days)	1983 Wet (days)
March	31	0	31
April	30	5	30
May	31	27	31
June	30	20	30
July	31	22	31
August	31	14	31
September	30	0	30

Table 9-6. Recreational Flows for the Hydrologic Record under Existing and With-Project Conditions, and Reduction in Average Number of Days per Month during which the 600 cfs Level is Met

Month	Existing Conditions (days)	With Project (days)	Days Reduced	Percent Reduction (%)
March	17	9	8	47
April	23	13	10	43
May	27	23	4	15
June	21	14	7	33
July	14	6	8	57
August	9	1	8	89
September	8	1	7	88

Table 9-7. Recreational Flows for Normal, Driest, and Wettest Years of the Hydrologic Record by Month during which the 600 cfs Level is Met

Month	1973 Normal (days)	1977 Dry (days)	1983 Wet (days)
March	0	0	31
April	25	0	30
May	31	0	31
June	30	0	30
July	31	0	31
August	31	0	31
September	30	0	30

Use of the project operation area varies between whitewater kayakers and commercial rafting outfitters. Kayakers indicate that they use the river on a regular basis when flows meet or exceed 400 cfs (Albright pers comm.). Information collected from questionnaires indicates that, on average, whitewater kayakers use the upstream segment from Boca to Floriston about twice as often as the downstream areas from Floriston to Verdi. Under current permit requirements, commercial rafting outfitters who proceed past the take-out location at Floriston must continue downstream to areas outside of Nevada County before they can take boats out of the river. Therefore, use of the affected segment by commercial whitewater rafters is limited by rafters' flow requirements for downstream segments of the river.

Most commercial rafting outfitters indicate that they will raft between Floriston and Farad if flows are more than 600 cfs, but that the downstream segment of the river from Farad to Verdi must have flows in excess of 800 cfs to support rafting. Peak-use periods for both rafting and kayaking occur primarily on weekends and holidays.

Recreational boating opportunities in the vicinity of the project facility (i.e., the boat chute and park and surf) will also change. With the restored Farad project, the available flows for “Park and Ride” play spot will be reduced by 435 cfs (400 cfs at the wheel, 10 cfs return flow, and 25 cfs transmission loss equals 435 cfs). This means that after the diversion is restored and operating at full capacity, the surfing wave will require a total upstream river flow of about 1,435 cfs. According to the exceedance curve for an average year-type (figure 3-4), suitable flows will be reduced from 30% to about 19% because of the diversion. This results in a 37% reduction. However, the diversion structure contains a boatable chute that will create favorable hydraulics for play boating. At full diversion capacity, flows in excess of 485 cfs (435 cfs + 50 cfs for low flow fish passage) are diverted into the proposed boat chute. Because of the concentration effects of the boat chute, a flow of 300 cfs will provide whitewater boat surfing when power generation is not occurring. While power generation is occurring, the total upstream flow in the river would need to be 785 cfs. Since this total river flow is less than the 1,000 cfs needed to surf the play wave, the new play spot created below the boat chute will function for longer periods than the current conditions needed for the play wave. According to the average year-type (figure 3-4) exceedance curve, this will occur about 37% of the time from May to September. This indicates that the boat chute will be more usable than the Park and Ride wave, but that there will be times when these recreation areas run concurrently. This may help ease crowding during peak use periods and add variety to this whitewater destination.

Implementation of the proposed project would create a substantial reduction in the number of days during which minimum recreation thresholds for kayaking and rafting would be met. These changes in flow conditions would create a long-term reduction in potential boating opportunities in the operation area (a designated beneficial use as identified in chapter 4, “Water Quality”). Therefore, this impact is considered *significant*. Potential mitigation of this effect includes adjusting flows to accommodate minimum flow thresholds for recreational boating, ~~and~~ creating improved conditions for recreational access and use, ~~or mitigating for project effects off-site.~~ Kayaking opportunities in the vicinity of the project facility would remain unchanged or improve slightly.

Implementation of Mitigation Measures 9-1 and 9-2 would minimize project effects and implementation of Mitigation Measure 9-3 would ensure overall recreational opportunities are maintained at an equal or higher level on the Truckee River flows to support beneficial uses, are maintained on a regular basis and would reduce this impact to a less-than-significant level. In the event that Mitigation Measure 9-3 is not implemented in 3 years, Mitigation Measure 9-2 will be implemented.

Mitigation Measure 9-1 9-2: Maintain 1 weekend per month of recreational flows from April ~~to~~ through September, when available

If flows are between 400 and ~~1,700~~ 1,625 cfs in the Truckee River above Floriston, SPPC will not divert water for power generation for the 1st weekend each month from April through September. When flows exceed ~~1,700~~ 1,625 cfs SPPC will maintain a minimum bypass flow of 1,500 cfs. Maintenance of flows on the weekend should be timed such that full flows ~~are achieved~~ (400 cfs) is available in the bypass reach by 8 a.m. on Saturday and are not diminished before 5 p.m. on Sunday. SPPC will be required to develop a whitewater boating use monitoring plan subject to approval of the SWRCB that will ~~monitor~~ evaluate future weekend boating use for a minimum of 2 years; if whitewater boating use exceeds a use level that results in excessive crowding exceeds a threshold for crowding, as defined in the plan, a second weekend each month of boating flows will be made available. SPPC will provide information to the public by flow-phone or website on when weekend flow releases will be made. To assess the impact of weekend recreational flows on aquatic life, SPPC will be required to develop a plan for monitoring macroinvertebrates and fish. Fish and macroinvertebrates will be monitored for a minimum of 5 years after completion of the dam. If the results of monitoring reveal that weekend whitewater flows have a significant impact on fish and macroinvertebrate health, then the SWRCB will at that time require alternative conditions to protect whitewater boating opportunities. If Mitigation Measure 9-3 is implemented, the fish and macroinvertebrate monitoring will not be required.

This mitigation measure reduces project effects to a less-than-significant level because it will minimize the loss of boating opportunities on the Truckee River, ~~allow commercial boaters to extend their trip length during the boating season,~~ and ensure a regular weekend flow when flows are suitable. Flows will not be suitable in dry years, but will be suitable in most months in normal and wet years.

The minimum flow for kayaking is 400 cfs and the preferred flow is 500 to 2,000 cfs. The minimum flow for rafting is 600 cfs while the preferred flow is 800 to 1,000 cfs, and the high preferred flow is 1,500 cfs. The mitigation was designed to allow a bypass flow that meets kayaking and rafting preferred flows (between 400 and 1500 cfs).

When flows are above 1,625 cfs, SPPC will provide a minimum of 1,500 cfs for boating. This is a combination of 1,500 cfs for boating and 125 cfs for generation. SPPC can use any water available above the maximum 1,500 cfs boating flow for generation. If the flow in the river above Floriston is below 1,625, then all of the water will be bypassed for boating.

Fluctuations of flow once or twice a month could affect invertebrates and fish, and this effect cannot be predicted. However, the ramping and monitoring proposed in Mitigation Measure 6-5 and 9-2 would ensure that the flow

requirements will be reevaluated and revised to minimize impacts if an adverse effect is detected. Because anglers are capable of using the Truckee River under a full range of flows, this mitigation would not adversely affect fishing opportunities, although there may be a slight ~~change~~decrease in angling success. However, aquatic resources, and thus angling success, will ~~also~~ be protected as ~~part of~~ through implementing implementation of ramping rates (Mitigation Measure 6-5) and the monitoring requirements in Mitigation Measure 9-2.

Regular reliable weekend flows could also result in increased recreational use and crowding on the river. The effect is not expected to be substantial for commercial boaters because the County regulates commercial permits. Private use could result in localized parking issues near the Caltrans shed south of I-80 though there is sufficient parking for approximately 10 vehicles. In the event parking becomes a problem and the County begins receiving complaints, the County may post signage restricting parking.

Mitigation Measure ~~9-1~~ 9-2 would result in restrictions on the project applicant's ability to generate power as indicated in appendix F.

Mitigation Measure 9-3: Contribute funds for the construction of a whitewater recreation park element of the Truckee River Recreation Plan

On behalf of the project, and in lieu of Mitigation Measure 9-2, the TMWA will contribute \$1.5 million toward the construction of Phase 1 of the Truckee River Recreation Plan (Truckee River Park @ Wingfield). The money must be used for the construction of a whitewater recreation park on the Truckee River in Reno, Nevada. The funds will be transferred prior to, or concurrent with, commencement of construction of the Farad Dam. At the start of construction, SPPC will notify the SWRCB which mitigation measure they have selected (either Mitigation Measure 9-2 or Mitigation Measure 9-3). If construction of the whitewater park is not completed prior to the completion of the Farad Dam, then Mitigation Measure 9-2 must be implemented until construction of the whitewater recreation park is complete.

A whitewater recreation park in downtown Reno is currently in the planning phases and will be designed, developed, and implemented by multiple agencies including the City of Reno, County of Washoe, U.S. Army Corps of Engineers, TMWA and others. TMWA is contributing to this mitigation measure because they are the likely future owner of the Farad Diversion Dam. Environmental compliance for the whitewater park will occur through the permitting process associated with Section 404 of the Clean Water Act.

This mitigation serves to compensate for the loss of recreational opportunities within the operation area by providing a recreational opportunity downstream on the same river and to the same regional recreational users. The whitewater park

will serve as a recreation destination that may increase recreational opportunities compared to those in the operation area.

In the event Mitigation Measure 9-3 is implemented, potential effects on aquatic resources due to ramping will be evaluated as described in Mitigation Measure 6-5.

~~Mitigation Measure 9-2: Create improved recreation access at the Farad powerhouse~~

~~The project applicant will work with permitting agencies, as well as commercial rafting outfitters and whitewater kayakers, to establish and improve river access by creating a take-out/put-in location for whitewater activities at the Farad powerhouse. This action will include completion or fulfillment of all Nevada County permit requirements. The project applicant will also provide parking for recreational boaters using the river at the take-in/put-out location.~~

Impact 9-5: Change in Angling Opportunities and Success during Project Operation

Changes in flow between 50 and 585 cfs caused by implementation of the proposed project would result in a narrower fishing corridor and reduced habitat availability for juvenile and adult rainbow and brown trout within the project operation area. As explained in chapter 6, “Aquatic Resources,” operation of the proposed project would decrease availability of habitat for fish species and selective life stages.

Project operations would result in a decrease in fishing opportunities and potentially angling success due to decreased habitat availability for adult rainbow trout and for both spawning rainbow and brown trout. Therefore, an adverse change in angling success in the project operation area is anticipated. This impact is considered *significant*.

Implementation of Mitigation Measures 6-2, 6-3, and 6-4 as explained in chapter 6, “Aquatic Resources,” would ensure that aquatic health is maintained and reduce this impact to a less-than-significant level.

Mitigation Measure 6-2: Prepare and implement a monitoring and evaluation program to ensure long-term fish protection

This mitigation measure is explained in chapter 6, “Aquatic Resources.”

Mitigation Measure 6-3: Maintain a minimum flow of 150 cfs in the operation area at all times during project operations

This mitigation measure is explained in chapter 6, “Aquatic Resources.”

Mitigation Measure 6-4: Monitor and evaluate water temperature effects of the project and implement mitigation measures if warranted

This mitigation measure is explained in chapter 6, “Aquatic Resources.”